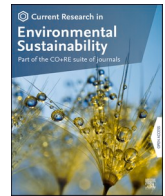




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Towards a green and sustainable recovery from COVID-19

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ABSTRACT

Whilst COVID-19 has left a devastating trail of economic and social losses, it has spurred incidental transitory positive externalities for the environment and climate. Key among these include; improved air and water quality, clearer skies and a projected 8% global blip in carbon emissions by the end of 2020. The global wave of restrictive lock downs implemented to contain the spread of COVID-19 in the short term account for these gains. The lockdowns were defined by limited public and private travel, closure of airports and borders, and a decline in industrial activity. However, most of these climate and environmental gains were secondary effects of the COVID-19 induced lockdowns and not based on decisive deliberate policy action, which casts doubts on their sustainability and ability to contribute to a green economy transition. Sustaining accrued environmental and climate benefits will depend on the direction of the COVID-19 stimuli and recovery packages – whether they are designed to work for the planet or against it. This article therefore elaborates on how state and non-state actors across the globe ought to be agile in building back sustainably to upend the ongoing collision course between the planet and economic development. It emphasizes the use of Sustainable Development Goals and Nationally Determined Contributions on climate change (NDCs) as a compass to shape the direction of COVID-19 recovery packages. It further enumerates six strategies that must underpin recovery packages to ensure win-win for the economy, society, and the planet.

1. Introduction

Whilst it is evident that the COVID-19 pandemic containment measures including lockdowns have slowed down anthropogenic activity (closure of transport systems, less industrial activity etc) resulting into reduced emissions, accompanied by incidental natural environment gains such as cleaner air, clearer skies and water ways, and recuperating ecosystems (EEA, 2020), the question is how long these benefits will last, and whether they will move the world closer to its environmental sustainability and carbon neutral goals espoused in the 2015 Paris Agreement on Climate Change and 2030 Transformative Agenda on Sustainable Development. The lockdowns have been identified as one of the COVID-19 containment strategies in the absence of a specific vaccine or treatment in the short term (WHO, 2020).

Evidently, cities across the world registered gains in the natural environment with significant reductions in pollution of several environmental domains such as soil, water and air (Khan et al., 2020). The European Environmental Agency (EAA) reported decreasing amounts of air pollutant concentrations attributed to reduced traffic especially in major cities under lockdown measures (EAA, 2020). Relatedly, Sharma

et al. (2020) reported that COVID-19 induced lockdowns improved air quality in various cities across the globe due to reduced emission levels of Particulate Matter (PM_{2.5}, PM₁₀), Carbon monoxide, and Nitrous Oxide. At city level, the scale of registered transitory planetary benefits seemed to depend on the length of the lockdowns. For instance, two weeks after the lockdown announcement on March 23rd, Nitrogen Dioxide (NO₂) pollution in some of the UKs cities fell by 60% (Khoo, 2020) compared to the same time in 2019 while the worlds most polluted capital New Delhi (India) recorded a 60% drop in fine particulate matter (Meredith, 2020), a pollutant that is considered as the worlds deadliest air pollutant by the World Health Organization (WHO, 2020). Relatedly, Chinas carbon emissions plummeted by a quarter during the peak of its COVID-19 outbreak (Lauri Myllyvirta, 2020). However, the World Economic Forum (2020) expressed uncertainty about the length of these benefits asserting that although the COVID-19 pandemic triggered cleaner air through its containment measures, it will do little to address the issue of air pollution in the long term. Therefore, it can be concluded that celebrating the COVID-19 generated incidental positive gains on the natural environment is premature and focus should rather be on how to sustain the accrued gains through granular policy decisions during the

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design of COVID-19 stimuli and recovery packages.

Besides, albeit the COVID-19 pandemic has thrown a wrench into the 2020 global climate change and environmental action calendar, there is an opportunity to ramp up action by harnessing several stimuli and recovery packages being prepared by governments to energize their economies. For this reason, this article succinctly cautions against the premature celebration and focus on the positive environmental spill-overs generated by COVID-19 induced lockdowns, enumerates the likely environmental and climate change setbacks triggered by COVID-19, and highlights strategies for adoption by governments to build back better by using the 2030 Agenda and 2015 Paris Agreement as pointers for the design of stimuli and recovery packages.

2. Methodology and approach

This article primarily relied on COVID-19 relevant literature in the form of articles and papers published in the wake of the COVID-19 pandemic between March 2020 and December 2020. It also inferred earlier reports such as the 2016 UN Environment Programme Frontiers Report which establishes an inextricable relationship between the health of the planet and public health. The Paper leverages these data sources to discuss how the world can simultaneously deal with the economic meltdown triggered by the COVID-19 pandemic while ensuring sustainable environmental management and climate change action.

3. Misleading narrative

Undoubtedly, the short term environmental and climate change benefits triggered by the COVID-19 induced lockdowns are commendable. However, since these have been achieved when the global economy is almost fully closed, caution ought to be taken to avert misconceptions and a misleading narrative that achieving climate change responsive goals and environmental sustainability will be largely disruptive, requires global lockdowns and is synonymous with economic decline. The incidental environmental benefits owing to COVID-19 containment measures have been accompanied by economic losses with the International Monetary Fund forecasting an imminent severe economic meltdown only second to the 1930s Great Depression (IMF, 2020). Conversely, climate change action and a green economy can be achieved with less disruptive interventions that decouple development from greenhouse gas emissions while building competitive economies and inclusive resilient societies simultaneously. The missing link is the recognition of climate change and environmental degradation as existential threats that equally require urgent prioritization and action to be contained.

Although there is a likelihood of COVID-19 incidentally contributing towards the attainment of certain SDGs such as segments of SDG 6 on Clean Water and Sanitation since hand washing with water and soap have been widely embraced as a preventive measure, a conclusive impact can only be ascertained at the end of the pandemic. Besides, the length of the current environment and climate change benefits owing to COVID-19 induced slowed economic activity is uncertain and may be wiped out on the onset of recovery programs implementation. Using the 2008 global financial crisis as an example, global carbon emissions fell by 1.4% in 2009 relative to 2008 but grew by 5.9% in 2010 in fossil-fuel combustion and cement production alone thus outstripping the incidental gains garnered during the financial crisis (Peters et al., 2011). The astronomical resurge in emissions was largely driven by global efforts to resuscitate economies. This implies that the longevity of accrued planetary benefits from the lockdown can only be established when the pandemic dust settles and their sustainability is tied to the direction of recovery packages, and the stimuli earmarked for revitalizing economies.

In the face of these short-term environmental benefits, the pandemic has also spurred setbacks in local and global action to combat climate

change and ensure environmental sustainability as unearthed in the subsequent section.

4. Likely impact of COVID-19 on the achievement of Sustainable Development Goals (SDGs)

The COVID-19 pandemic and its associated partial and total lockdowns present a profound test of the resilience of the SDGs and the ability to achieve them by the set deadline of 2030. The intricate linkage and inter-relatedness nature of the various SDGs where none can be achieved in isolation of the rest is likely to compound the scale of dire implication of the pandemic on the goals realization. Notably, existing global inequalities will be exacerbated by the COVID-19 total and partial lockdowns. This is because whereas the global north can sustain lockdowns and provide adequate safety nets to its vulnerable sections of the population, the same cannot be said about the global south which hosts a greater proportion of people living in extreme poverty, with the World Bank (2020a, 2020b) indicating that Sub-Saharan Africa alone accounts for 63% of the global poor population. Partial and total lockdowns in the global south will thus worsen pre-pandemic existing vulnerabilities such as income poverty and food insecurity directly reversing gains accrued in the race towards realizing SDGs. Therefore, although some sections of the population who live from hand to mouth with casual labour as their biggest asset may be shielded from COVID-19 through lockdowns, they will have to wrestle with other life-threatening challenges such as hunger and other forms of poverty— income and energy. Relatedly, albeit partial and total lockdowns were flagged as a silver bullet to COVID-19 containment by WHO, they are blind to the housing deficit experienced especially in the global south where several households live in single rooms with others lacking basic housing facilities. The lockdowns thus only cause congestion while fueling domestic conflict driven by scarcity of resources.

Considering the above, COVID-19 and its containment measures is likely to reverse progress on the achievement of SDGs on ending poverty (SDG1), zero hunger (SDG2), gender equality (SDG5), reduced inequalities (SDG 10) and climate action (SDG13) among others. In agreement, Naidoo and Fisher (2020) affirm that two thirds of the 169 SDG targets are either under threat as a result of this pandemic or not positioned to mitigate its impacts. This is premised on the SDGs success factors which is sustained economic growth and globalization, both thwarted by the COVID-19 pandemic. Quantitatively, the World Bank (2020a, 2020b) projects that between 40 million to 60 million people will be pushed back into poverty by the end of 2020 making ending poverty by 2030 out of reach. Additionally, about 130 million people or more risk facing acute food insecurity as part of the damage trail left by COVID-19 (WFP, 2020). The World Bank in its Reversals of Fortune Report (2020) reported that for the first time in over twenty years, global poverty rose in 2020 due to the disruption of the COVID-19 pandemic. Therefore, the pandemic will erode progress made towards SDGs and may undermine their achievement by 2030 if the recovery packages are not designed in a way that salvages and builds on reminder gains garnered over the years.

5. Environmental and climate change setbacks triggered by the COVID-19 pandemic

The incidental natural environment gains from the pandemic notwithstanding, there are some setbacks in global environmental and climate action owing to the COVID-19 pandemic outbreak. For instance, with global and local focus on saving lives and containing the pandemic, the concern for climate change and environmental sustainability has dimmed, despite of 2020 being earmarked as the year of enhanced global climate action. Unfortunately, the climate change threat is an equally urgent emergency whose severity is increasing by day. Besides, a warmer planet will imply more frequent lethal pandemics given the scientifically proven nexus between environmental ecosystem health

and public health.¹

A 2016 UN Environment Programme Report² indicates that 60% of all infectious diseases in humans are zoonotic (transmitted to humans via animals) as are 75% of all emerging infectious diseases with environmental degradation being the underlying driver. Therefore, failure to reverse the current trend of environmental degradation poses a huge threat to public health since habitat loss and deforestation bring humans into closer contact with wildlife, thereby compounding the risk and frequency of zoonotic pathogens spillover from wildlife to humans. All this disrupts economic, social, and environmental action. Specifically, the COVID19 pandemic has triggered the following setbacks to environment and climate change action:

- i. Increasing volumes of unrecyclable waste and organic waste emanating from limited trade in perishable agriculture products due to travel restrictions, disruptions in supply chains and dumping of surplus produce (WEF, 2020). Severe cuts in agricultural and fishery exports followed by low domestic markets absorption have led to significant accumulation of organic wastes yet municipalities have suspended waste collection and recycling activities for fear of spreading COVID-19 in recycling centers (UNCTAD, 2020). Leaving waste to decay produces methane emissions (Shirmer et al., 2014) and these are likely to rise during and after the COVID19 crisis. Besides the organic waste, a new strain of waste (COVID-19 medical waste) has also emerged especially the single use masks, sanitizer containers which may aggravate the poor solid waste management systems in some cities across the globe;
- ii. With deployment of security forces to enforce COVID-19 lockdowns and containment measures, it implies that less security is available to protect habitats and curb illegal poaching and logging. For instance, illegal fishing remains high in Malaysia (Dian Septiari, 2020) while the rising unemployment caused by the crisis is likely to compound environmental degradation in the form of deforestation for charcoal making and land use changes in fragile biodiverse ecosystems such as wetlands.
- iii. Expectedly, the response to the pandemic at global and national level will be marred by budget cuts and reallocations. Saving lives and containing the pandemic are likely to receive the first call on resources at the expense of other pressing needs such as sustainable environmental management and climate action. The budget cuts and reallocations will be more apparent in developing countries with weaker disaster preparedness systems. The possibility of reallocating resources earmarked to combat climate change and environmental degradation cannot be ruled out. The Manitoba province government has already cut environmental funding (Lamber, 2020) as part of its plan to cope with the fiscal deficit resulting from the COVID-19 pandemic. Unfortunately, this will be counterproductive in the longrun since the health of the planet is intricately linked to public health;
- iv. There is likely to be a decline in Official Development Assistance flows between advanced economies and developing countries. This spells doom for climate action and environmental management projects and plans in Sub-Saharan Africa most of which are externally funded by development partners. The pandemic has diluted globalization indicated by growing nationalism rather than internationalism where countries are closing borders and mobilizing gigantic country or region-specific recovery packages with peanuts earmarked for concerted global recovery. For instance, whilst developed economies are poised to spend an estimated USD 11 trillion on domestic responses to COVID-19,

appeals to raise only 0.3% of this amount (USD 35 billion) to avail COVID-19 vaccines, diagnostics, and treatments to all countries (Homi Kharas and John McArthur, 2020) are failing to come to fruition.

- v. The UN Climate Change 26th Conference of Parties (COP 26) initially scheduled for November 2020 in Glasgow was postponed to 2021 (UNFCCC, 2020). Importantly, this conference was supposed to be preceded by submission of country specific enhanced climate change action (reviewed Nationally Determined Contributions - NDCs), as a five-year milestone towards achieving the 2015 Paris Agreement Goal of limiting global average temperature rise to below 2 °C above pre-industrial levels, and pursuing efforts to limit temperature increase to 1.5 °C above pre-industrial levels by the end of this century. With the discussions postponed, there is likely to be a delay in submissions of enhanced NDCs thus putting the Paris Agreement to a test regarding the achievement of its first milestone.

6. How to build back better

The COVID 19 pandemic has exposed the volatility of the current economic and development system, and it will be unfortunate to emerge out of the crisis and continue with the same frail system unaltered. The planet, financial and economic systems, and governments may lack the current resilience to withstand and recover from future related disasters if the global system is simply rebuilt back to the pre COVID-19 state. The price of oil, a life blood of several economies, fluctuated by 300% (Julianne Geiger, 2020) between January and April 2020, plunging to negatives in April, implying that oil producers and traders had to pay consumers to get rid of their black gold. Economies that are fully reliant on export of this fossil fuel are at a higher risk of the economic melt-downs triggered by the COVID-19. Therefore, building back better implies using the holistic sustainable development goals as the compass to design recovery packages and prioritizing interventions that work for the planet, people, and economy. This direction will hedge against addressing one challenge of the pandemic while worsening another – climate change and biodiversity loss. Design of the recovery packages should thus be underpinned by the following strategies:

1. **Adoption of the One Health Approach in the design of Recovery packages.** One health approach loosely means ensuring harmonious and healthy co-existence of people, animals, and ecosystems. It has increasingly been proven that the health of the planet determines public health and as such, building resilience against future pandemics requires holistic policies and strategies that cater for the health and integrity of biodiversity, humans, and ecosystems. WHO (2019) defines “One Health” as an integrated unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems. Recovery packages should desist from the temptation of fully focusing on economic recovery and resuscitation at the expense of social and environmental strategies that build happy resilient societies while conserving and sustainably managing biodiversity;
2. **Conditioning highly polluting corporations, businesses and industries' access to recovery packages, bail outs and economic stimuli to a commitment to embark on sustainable reporting and reduced carbon footprint.** A great deal of the recovery packages and bailouts will be disbursed to businesses in energy, transport and agriculture among others who have been prioritizing economic gain and profitability at any cost of the environment and biodiversity in the pre-pandemic era. Ensuring that one of the bailout packages access requirement is commitment to improved corporate environmental and climate action performance will go a long way in ensuring that COVID-19 recovery packages move the world closer to its climate and sustainability goals espoused in the 2030 Agenda and the Paris Agreement on Climate Change. Importantly, this does not

¹ WHO-CBD State of Knowledge Review on Biodiversity and Human Health, 2015

² UNEP Frontiers Report, 2016

imply denying highly polluting or environmentally non-compliant corporations bailouts but rather using them (bailouts) as an impetus to prompt corporations move towards sustainable corporate reporting, integration of climate risk in their conventional risk analysis, and reducing their carbon footprint with the access of the recovery or bailout packages henceforth. This will be a win-win for the economy, corporations, and the planet;

3. **Integrate environmental sustainability and climate change action in the design of quick, short term, medium to long term COVID-19 stimuli and recovery packages respectively.** As development gains traction, consumption patterns inevitably change thereby stimulating agriculture intensification to feed the growing global population estimated at 7.7 billion (UNDESA, 2019). This is accompanied by land use changes which habitat loss, deforestation, and biodiversity loss culminating into environmental degradation, both a key driver and an effect of climate change. Environmental degradation and climate change have been singled out as significant explanatory factors for the increased frequency of zoonotic infections (UNEP, 2019) such as Corona viruses. Accordingly, sustainable recovery will require a global paradigm shift from the status quo of waiting for the zoonotic diseases to strike and race towards finding a vaccine to a systemic approach that deals with underlying drivers of such pandemics. With environmental degradation and climate change identified among the underlying drivers, a robust recovery programme should move the globe towards addressing illegal wildlife trade, protecting water resources and oceans from pollution particularly plastics, conserving biodiversity and habitats, and reducing greenhouse gas emissions in a bid to achieve carbon neutrality by mid-century and limit temperature rise to below 2 °C by 2100 as committed in the Paris Agreement on Climate Change. This implies that sustainability must permeate across quick responses such as stimuli and medium to long recovery packages and plans. Prioritizing environmental sustainability and climate response in COVID-19 recovery measures will not only resuscitate ailing economies but also act as a medium to long term preventive strategy against related future zoonotic pandemics. Environmental degradation accompanied by habitat loss, biodiversity loss, and a warmer climate creates an amiable environment for emergency of dominant species, and viruses that cannot be controlled ecologically which evolve with the changing temperatures to find new hosts (UNEP, 2019). Fig. 1 below enumerates the primary drivers of previous disease emergencies while Fig. 2 indicates the past four major zoonotic diseases and their impact;
4. **Pursue an inclusive approach in the design of COVID-19 Recovery packages to address the diversity of needs of all victims of the pandemic.** Unlike previous global crises such as the 2008 global financial crisis that left largely financial and economic impacts, the COVID-19 pandemic is littered with multifaceted dire impacts transcending the economic, social, and environmental spheres. Therefore, addressing or recovering from these multiple setbacks cannot be solely addressed by governments but rather a consortium of actors such as the private sector, civil society, government, and development partners to thoroughly deal with various segments of the challenges at hand in the short, medium, and long term. These actors ought to foster a recovery that is hinged on futuristic planning that builds resilient competitive economies and inclusive societies, to reduce the severity of disruptions posed by future related disasters. Besides, replication of the scale of government coordination and public behavioral change demonstrated in the response to the pandemic to deal with other existential threats such as climate change and biodiversity loss is essential albeit its success will also be hinged on partnerships.
5. **Leverage the rare window of gigantic government expenditures to combat climate change and environmental degradation.** Albeit science has proven that climate change is an emergency, and a

warmer planet will only imply increased frequency of disasters (IPCC, 2018), the response over the years has not matched with the magnitude of this existential threat, yet, the economic and social cost of climate change is evident. Achievement of the Paris Agreement goal of limiting temperature rise to 2 °C by the end of this century, through racing towards carbon neutrality by mid-century will remain a mirage, if the recovery packages work against flattening the climate change and environmental degradation curve. The global economy is likely to rise with immense oomph to offset losses incurred during the COVID-19 lockdowns. The recovery process is therefore capable of sparking off an exponential rise in greenhouse gas emissions above normal circumstances thereby throwing the planet into a deeper dungeon of climate change and falling short of the required 7.6% annual reduction target in global missions to achieve zero net emissions by 2050 (UN environment 2019). There are granular interventions that can be captured in the recovery packages. These include; stimulation of uptake and deployment of affordable renewable energy technologies; de-risking of green investment opportunities to trigger private sector capital and ingenuity; leapfrogging to green technology to reshape unsustainable production patterns and foster green industrialization and circularity; and formulation of green fiscal instruments (subsidies on green technologies, carbon taxes and pricing) to nurture green capital markets expansion without imperiling financial stability. Equally important is resuscitating cities through retrofitting buildings to enhance energy efficiency, augmenting green public transport, and prioritizing affordable green housing since some catastrophes like COVID-19 call for self-isolation at home.

6. **Equally important is the need to invest in research coupled with heeding scientific advice** on impending disasters such as; a warmer planet owing to a changing climate, that will trigger unprecedented disasters at a higher frequency, sea level rise and more zoonotic pandemics. Currently, scientific climate advice is being refuted in favor of empty mythical optimism propagated by climate change critics and deniers. The 2018 Inter-Government Panel on Climate Change Report³ evidently indicated that current climate action is insufficient to limit average temperature rise as required by the Paris Agreement. The COVID-19 recovery and stimuli packages provide a rare window of opportunity to augment action geared towards combating climate change.

7. Conclusion

The COVID-19 pandemic has exposed the fragility and underlying social inequalities inherent in the current economic system. The devastation trail left by COVID-19 containment measures (lockdown and halt of economic activity) in terms of economic loss, human mortality, job loss and development gains reversal are colossal. Since COVID-19 is zoonotic and linked to environmental degradation, the conventional development model that shallowly focuses on economic progress at any cost is obsolete and detrimental to sustainable development.

To upend the existing global development trajectory that works for the economy but against society and the planet, state and non-state actors across the globe must harness the rare window of opportunity presented by COVID-19 recovery packages. They can actualize this by rallying behind Sustainable Development Goals and Nationally Determined Contributions (NDCs) as the compass of COVID-19 recovery packages. The design of these packages should be underpinned by; the One Health approach; conditioning access to bailouts by corporations to their commitment to corporate sustainability reporting; integrating climate change and environmental sustainability in recovery strategies;

³ Special Report on the Impacts of Global Warming of 1.5 °C above pre-industrial levels

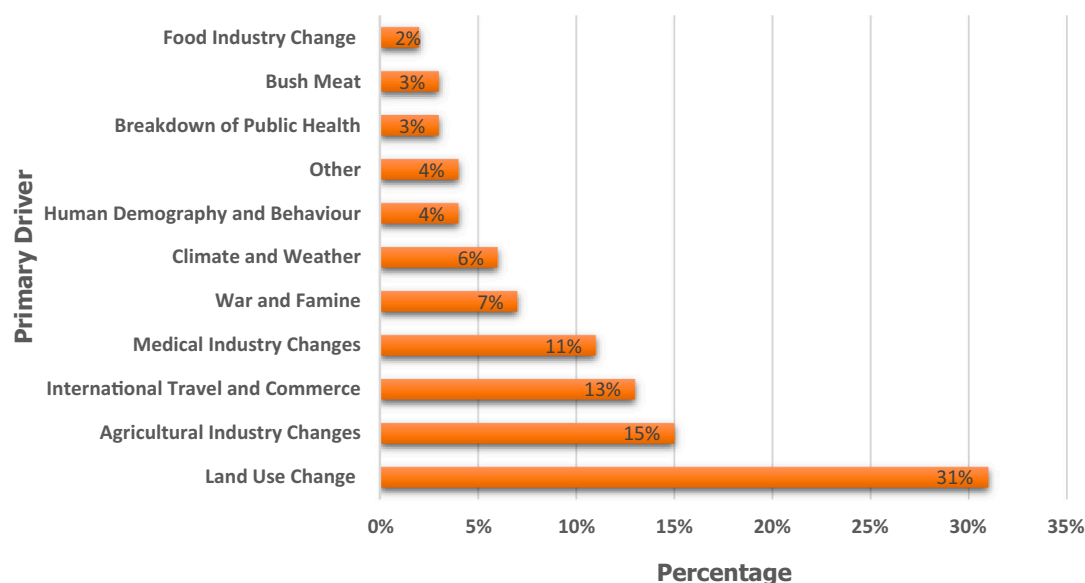


Fig. 1. Primary Drivers of Past Disease Emergencies.

(Source: Constructed by Author based on Data from UNEP Frontiers Report, 2011)

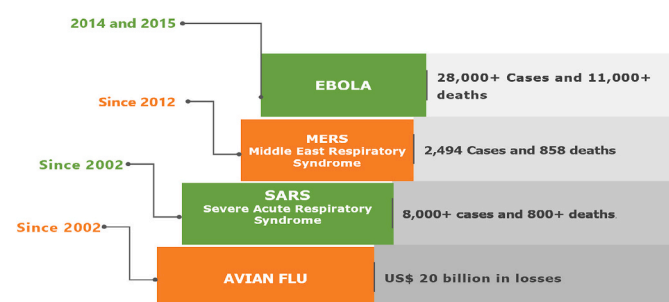


Fig. 2. Recent Zoonoses and their Impacts.

(Source: Figure constructed by Author based on data in the UNEP Frontiers Report, 2016)

ensuing a highly inclusive and consultative process in the design of recovery packages; and investing in scientific research to surveil and forecast impending disasters to inform disaster preparedness and resilience building.

Sustenance of environmental benefits accrued during the COVID-19 induced lockdowns will depend on the direction taken by stimuli and recovery packages. These benefits will either be compounded or wiped out upon the ease of lockdowns and recovery of the global economy. Either of the result will depend on whether the world learned and forgot nothing from the events leading to and during the COVID-19 pandemic. Notably, even the most stringent climate change response interventions are not as disruptive as COVID-19 response measures (lockdowns and halt of economic activity). Therefore, the narrative that the world needs to close (lock downs) to achieve environmental and climate goals sparked by the incidental gains (cleaner air, clearer skies and waterways) accrued during the lockdowns is mythical and misleading.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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